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AUTHOR Taylor-Way, David G.
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ABSTRACT

An adapted form of interpersonal process recall (IPR) and a theory of educating are described. IPR, which was originally conceived as a method for interpersonal counseling, may help college teachers improve their instruction, based on the conceptual framework derived from D. B. Gowin's (1981) theory of educating. The adapted recall technique involves the teacher, an inquirer, and several of the teacher's students who watch a videotape of teaching. The teacher and students use the videotape to recall thoughts and feelings that had taken place during the original teaching episode. The inquirer attempts to get the teacher to attend to the regularities in his or her teaching, to conceptualize those regularities, and to develop principles of instruction out of those concepts. Teachers are encouraged to express their thoughts and feelings about teaching so that these can be recorded over time as they are modified. Three pertinent principles derived from Gowin's theory of educating are as follows: (1) that a knowledge of the interconnections between feelings, thoughts and actions is critical to establishing a sense of educative value; (2) that by making records of covert teaching events such as expressions of thoughts and feelings of both teachers and their students there is a means of understanding the meaning of overt events such as actions, and for research purposes; and (3) that by maintaining the interrelationships between the events of teaching there is one way of using facts to improve the conceptualization of teaching events and of converting tested concepts into criteria of teaching excellence. Research conducted at Cornell University to test the effectiveness of the adapted recall technique with teaching assistants is summarized. (SW)

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ADAPTATION OF INTERPERSONAL PROCESS RECALL AND A THEORY OF EDUCATING FOR THE IMPROVEMENT OF COLLEGE INSTRUCTION **

David G. Taylor-Way, Ph.D., Cornell University

This paper will describe the adaptation of Interpersonal Process Recall (IPR) from its original conception as a method for interpersonal counseling to a technique for helping college teachers improve their instruction by the application of a theory of educating to help them develop and refine concepts and principles of teaching. In addition, the adapted technique will be explained as it can be used by the researcher studying the more covert processes of teaching. Research at Cornell University* has indicated that the combination of IPR principles and a conceptual focus derived from a theory of educating developed by D.B. Gowin (Gowin, 1981) has significant application for training teaching assistants to conceptualize their teaching.

The work of Norman Kagan (1973, 1975) in developing the IPR method revealed the advantages of using a videotape of human interactions as a stimulus for recalling such covert experiences as thoughts and feelings, impressions and concerns. Previous work using videotape concentrated on overt behaviors as is evident in the use of microteaching techniques with videotape to develop teacher classroom behaviors and performance (Allen & Ryan, 1969; Medley, Soar & Soar, 1975).

Two problems appear consistently when videotape is used as a means of critically evaluating performance in terms of behaviors. First, if it is decided that an individual must change a behavior, there is no provision in the method for accounting for the antecedents of that behavior such as motives, thoughts and feelings which may very well influence behavior change. Second, by concentrating on observable behaviors on the videotape, the participant interested in changing is often tempted to concentrate on trivial events and may tend to overlook the more critical underlying variables, resulting in what some have called a "cosmetic effect" (Carroll, 1976).

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Although IPR is a powerful tool as it was originally conceptualized by Kagan, it provides little direction for the role of the "inquirer", or recall guide, if the method is used to help a person improve his or her instruction. In its original conception for use in inperpersonal counseling, IPR protocol suggests that the inquirer should not give advice but should facilitate communication between individuals and help them increase their awareness of their own dynamic processes.

The improvement of instruction cannot result merely from the use of the IPR technique, however. Educational concepts and principles must be used to guide instructional improvement. The concept of teaching as "the achievement of shared meaning" from Gowin's theory of educating, together with the concept of meaningful learning from Ausubelian cognitive psychology (Ausubel, Novak & Hanesian, 1978; Novak, 1977) which emphasizes determining what the learner already knows and teaching accordingly, serve to provide the inquirer with a conceptual framework to guide the review of teaching through the recall process. The result of the work by Gowin, Ausubel and Kagan has lead to the development of a method for the improvement of instruction which aims to help the teacher learn to integrate feelings, thoughts and actions in accordance with feedback provided by the teacher's students and the inquirer during the recall process.

The adapted recall technique involves the teacher, an inquirer and several of the teacher's students who watch a videotape of teaching. The teacher and students use the videotape to recall thoughts and feelings which had taken place during the original teaching episode. The inquirer attempts to get the teacher to attend to the regularities in his or her teaching, to conceptualize those regularities and to develop principles of instruction out of those concepts. Teachers are encouraged to express their thoughts and feelings about teaching so that these can be recorded over time as they are modified. These records serve as a means of evaluating refinements useful in guiding instructional improvement.

Not all recalled thoughts and feelings will be of value for instructional improvement, however. To develop concepts of teaching it is necessary to confront the conditions under which certain events took place. Where similar conditions occur, do equally similar events transpire? If so, there may be a regularity which can be labeled, such as "hogging a discussion" or "putting students down". Concept development happens over time as the critical attributes of a concept become more clarified and distinct from other, irrelevant attributes and events. To encourage conceptual resolution, the inquirer must get the recalling teacher to recognize and label regularities in his or her teaching events. In addition, in those cases where there is a regularity but it is not perceived by the teacher clearly, the inquirer must help make sense of what previously had seemed arbitrary and without pattern:

> Teacher: I immediately jumped to a conclusion about what he was asking and went on to answer that.
> Inquirer: This might have to do with what we were just talking about. Everybody to a certain extent has a verbal rhythm. It might be that your rhythm is too fast, your pace both in asking questions and in answering them. You might think about it in terms of rhythm.
> Student: Yeah, just waiting a little longer to think about the question.
> Teacher: Also, if I had waited there he could have made me clarify it.

In this case the inquirer provided the teacher with a concept of rhythm to think about her teaching. Feedback from the recalling student helped her formulate a principle with which to deal with similar future situations.

A number of assumptions serve to orient the conceptualization process. They are:

1) That teaching can be improved by developing a teacher's concepts of teaching;

2) Change in teaching actions (behaviors which have meaning and are intentionally carried out) may not always be predictably evident due to uncontrollable variables;

3) Feelings are important in governing classroom events and teaching actions;

4) An integration of thinking, feeling and acting is important in establishing a sense of educative value;
5) Feedback in the form of student reactions and responses is useful in governing subsequent teaching actions;
6) Feedback to teachers on the teaching process is useful in governing change in teaching behaviors (habitual, unconsciously performed responses);
7) Teaching and learning do not exist in a cause and effect relationship.

Theoretical Basis

A theory of educating is more than a theory of instruction. Recently, some authors have argued certain of the problems inherent in the development and application of theories of instruction (Gehlbach, 1979; Snow, 1977). Their arguments are based on the premise that a theory of instruction must concern itself with the facts of individual cognitive differences and varying levels of student aptitude. If a theory of instruction must serve to guide pedagogical practice, then as Snow and Gehlbach point out, it may have to be constructed in such a complex form, faced with the need to accommodate individual student differences, that it becomes unwieldy and thus useless. If this is the case, and I suspect that it may be, then where are we to turn for an adequate theoretical basis with which to guide instructional practice?

Concepts from a theory of educating developed by D.B. Gowin at Cornell University can help guide the recall process by providing an epistemological foundation with which to review recorded teaching events, both overt and covert. Gowin's theory includes a useful definition of a concept as a "sign or symbol pointing to a regularity in events" (Gowin, 1981).

The primary concept which binds Gowin's theory of educating together is that of meaning. He conceptualizes teaching as "the achievement of shared meaning." His concept of learning is "the active reorganization of meaning." These two concepts do not fight with each other because they are both oriented toward the same phenomenon, that of meaning, but from distinctly

different perspectives. To say that teaching is the achievement of shared meaning suggests two facets of meaning. One facet is that of personal, idiosyncratic meaning. If I give an essay exam and ask my students to write down what the concepts "warmth", "energy", "efficiency" or "conservation" mean to them, no two need be exactly alike. The essay responses will reflect my students' personal meanings of those concepts. Since they are sharing that meaning with me in a social context, there will be overlap between their own personal meanings for those concepts and the meanings I hold for them. This second facet of social meaning makes the sharing of meaning possible. The fact of personal meaning makes the sharing of meaning necessary, if we are to understand each other. The fact that students come to class with their own meaning sets provides a basis for connecting the new meanings I as a teacher may wish to share with them from out of the curriculum.

The ultimate objective of teaching as it is thus defined is to pave the way for learning so that the student no longer requires the assistance of the teacher. To do this demands that the teacher's instructional planning take the learning process into account. If we define teaching as a process which acknowledges the uniqueness of the individual's understanding of subject matter meanings, any concept of learning applied to instructional planning must be consistent with this notion. Teachers are responsible for teaching, students are responsible for learning. The distinguishing of relative responsibilities means that the evaluation of instruction cannot be conducted by looking at student academic achievement as an index of successful teaching. Teaching may have a relationship with learning but that relationship is not of a cause and effect nature. The exact nature of the relationship necessarily will vary with each student. Therefore, the proper classroom concern, in an immediate sense, for the teacher is teaching. This is not to say, however, that a concept of learning is irrelevant to the teacher. A comprehensive and meaningful understanding of learning is very important to the effectiveness of instructional planning.

The cognitive learning theory of David Ausubel (1963, 1968) provides a definition of "meaningful learning" compatible with the concept of teaching as the achievement of shared meaning. Ausubel conceptualizes learning as an idiosyncratic process, considers it essential to select and identify the major concepts within the field of study, and recognizes the need to present these concepts in a psychological order. Psychological order for Ausubel assumes a hierarchy of concepts from the most general, all inclusive, to more specific concepts which are subsumed under the broader ones. Ausubel emphasizes that learning is a meaningful process:

> ...meaningful learning takes place if the learning task can be related in nonarbitrary, substantive (nonverbatim) fashion to what the learner already knows, and if the learner adopts a corresponding learning set to do so. (Ausubel, Novak & Hanesian, 1978, pg. 27)

To be concerned with what the learner already knows is consistent with Gowin's concern that the teacher should recognize the existing meaning pattern the student maintains. This concern is a basis for guiding the planning of instruction. It means that the teacher must somehow strive to maintain a sense of what the students know and understand during the teaching process as a governing factor of subsequent teaching.

If the teacher is to help the students learn, he or she must get the students to put into words their understanding of the subject matter meanings. The words students use to express meanings clarify the process of sharing meaning for the teacher. As such, student responses and reactions can serve as a form of feedback to the teacher which can serve as input data to guide further teaching. Feedback from students serves as a confirmation that meaning has been reliably shared. Feedback can also serve to guide the selective refinement of student thinking.

The meanings that have been shared by the student are conventionally obtained through the use of quizzes, examinations, term papers and mid terms. These responses are also used to

evaluate student learning. To wait until exam time is too late for the teacher to govern further clarification of misconceptions. Teachers must be responsible for governing those consequences of their teaching which they have control over. As an authority the teacher must have governance over the subject matter knowledge. In addition, the teacher must govern the teaching environment created in the classroom, a skill which requires acknowledging that students have physical and emotional feelings which continuously occur. Finally, the teacher must govern the process of teaching as meanings are shared.

As a governance concept, feedback can be solicited in class by the teacher to help determine the course of classroom teaching events. For a teacher to operate in the absense of any student feedback, such as in a lecture (although there may be a minimal level of facial feedback) is to limit teaching to a one-way, information injection process. The students may not have the opportunity to derive much meaning from that information, only to passively record it.

Of course teachers do more than share meanings with their students. They also must prepare for their classes, evaluate student learning through grading and other means and maintain a sense of control over the whole process. Thus a theory of educating must include more than just concepts of teaching and learning. It must encompass the concepts of governance, curriculum, educational value and educative events, among others.

According to Gowin, an educative event is "an intervention in the living experience of persons designed to change the meaning of experience." As interventions in our lives, educative events are governed by controlling meaning within a sense of educative value, otherwise the results of those events may be miseducative. For an event to have educational value it must affect the student in at least two ways. First, it must be judged as significant, rather than of a trivial nature, and second, it must be <u>felt</u>. Thus, for Gowin, value is "felt significance." The role of feelings is important in establishing a sense of educational value. Feeling something, more than just thinking of something is part of any experience judged

significant. To experience value is to have made an important connection between our thinking and our feeling.

If educative events change the meaning of experience they must generate a kind of power to do so. For Gowin, feelings play a large part in establishing this power. In the typical college classroom, feelings are rarely taken into account or even recognized. Feelings should not be sought out for their own sake, but an increased awareness of how feelings connect with meanings can affect both teaching and learning.

From this analysis it becomes apparent that with the appropriate application of theory and the successful adaptation and use of IPR techniques, the videotape recall experience becomes an educative event by definition for the teacher who is trying to improve his or her instruction. The ultimate goal then becomes one of helping the teacher develop and sharpen concepts of teaching such that the refined conceptualization frees him or her from the necessity for intervention of the recall process itself.

In summary, Gowin's theory of educating provides us with a workable, relevant and practical definition of teaching in addition to a clearly distinguished conceptual framework with which to guide and focus the improvement of instruction through the use of an adapted form of IPR. Specifically, three major principles emerge from this conceptual framework: 1) that a knowledge of the interconnections between feelings, thoughts and actions is critical to establishing a sense of educative value; 2) that by making records of covert teaching events such as expressions of thoughts and feelings of both teachers and their students is a means of understanding the meaning of overt events such as actions, and for research purposes 3) that by maintaining the interrelationships between the events of teaching, the facts, or records of those events, and the concepts, or regularities in those events which were recorded is one way of using facts to improve the conceptualization of teaching events and ultimately of converting tested concepts into criteria of teaching excellence.

Research Results

Research at Cornell University has been undertaken to test the effectiveness of the adapted recall technique in helping teaching assistants develop their concepts of teaching and to learn the specific application of concept maps, advance organizers and the solicitation of student feedback of shared meanings. Using a case study approach, records of TA teaching and recall comments were made using video and audiotape. Content and pattern analysis of these facts resulted in the refinement of the concepts of feedback, teaching as shared meaning, governance and the role of the recall inquirer in encouraging TAs to effect changes in their teaching. Additional work is being undertaken to determine to what extent the inquirer role can be taught to experienced TAs who are judged by their students to be good teachers so that they can in turn train successive generations of TAs in autonomous TA training programs.

In the Division of Biological Sciences, 22 TAs were given training using videotaped recall techniques over an eight week period. The training consisted of three components, pre-service, in-service and evaluation. The complete time requirement for each TA in the training totaled ten hours. The pre-service component involved the TAs in groups of five and six in a microteaching format where they were introduced to the recall process. Data on initial skill levels were recorded. In addition, a seminar and workshop on developing concept maps (Stewart, Van Kirk & Rowell, 1979), advance organizers (Ausubel, 1978; Mayer, 1979) and the solicitation of student feedback was held.

The in-service component consisted of two videotapings which were each followed up by a recall session involving several volunteer students from the TAs' laboratory sections and which were scheduled within 24 hours of the original class periods taped. Each recall session was an hour and a half long and for each TA spaced roughly a month apart. Recording of the recall sessions were made during which the TAs were asked to summarize the main concepts and principles of teaching that had come up during the recall. Follow up data were

collected for each TA every week on their use of concept maps, advance organizers and solicitation of feedback.

Evaluation was conducted using a brief student rating form which was administered every week, together with a final end of the semester course evaluation. During the eight weeks of the study the TAs increased their use of concept maps by 46%. In most cases where a TA had used a form of advance organizer in the laboratory, the attending recall students reported that it helped illustrate the importance and relevance of the lab experiment for learning biology. In a final training program evaluation questionnaire, 77% of the sample of TAs reported that the verbalization of the implicit processes of their teaching and the recall session feedback from the inquirer and their students helped them to sharpen their thinking about teaching.

The recall discussion records resulted in the identification of other concepts of teaching which grew out of recognizable patterns in the TAs' teaching. Some of these concepts have been identified in other research studies on teaching. Although these unexpected concepts were not tested in any experimental sense at Cornell, they serve to advance the theoretical basis of future research and practice. Some examples of these unanticipated findings follow.

When a TA wanted student feedback and had solicited it by asking, "Are there any questions?", frequently the students in the recall session would report they did in fact have questions but were afraid to ask them for fear of appearing ignorant in front of their peers. In those classrooms where there was a higher level of interaction as recorded on videotape, the recall students indicated their TA had communicated a sense of valuing their students' thinking and effort in responding, regardless of its accuracy. The sense of value the students perceived helped to encourage their participation.

The concept of "wait time" (Rowe, 1973) was another factor which has been reported as critical in governing classroom interaction. When the TAs could see that they typically left no more than a second or two on the videotape for students

to respond or ask questions of their own, this realization was powerful in governing subsequent teaching. The concept of pacing or rhythm contributed to either enhancing or limiting the level and quality of classroom interaction.

The concept of feedback helped the TAs improve their teaching. The more resolved the feedback provided by students in the laboratories, the better able the TA was to help clear up misconceptions. A principle of teaching was generated out of this suggesting that the TA must strive through repeated questions to gain as resolved a level of student feedback as possible. Other methods were equally appropriate in soliciting resolved student feedback: having students explain what they did understand, and generally using whatever interactive technique which was effective in getting the students to put into words the meanings they had grasped or failed to grasp from the subject matter. With such detailed feedback the TA had a clearer basis on which to govern later teaching, what needed to be stressed, whether new material could be introduced or whether a review was needed.

Another concept of teaching which provided a principle of governance was that of role reciprocity. At times the TAs would express a desire to review material with their students in an interactive way which would be governed more by what the students needed to know than by what the TA perceived or interpreted as their need. By exchanging roles with them, having the students "teach" what they understood while the teacher acted as both student and guide, a higher level of shared meaning was possible.

By sitting down in a videotape recall session with a few students, a teacher is able to gain a much clearer view of how students are thinking and feeling while in the classroom and how specific actions carried out by the teacher can influence the thinking and feeling of the students. Over time, an increased awareness of the students' needs and point of view can be powerful in influencing a teacher's concepts of teaching, which will ultimately manifest itself in the teacher's actions.

One year after the initial biology TA training program a

similar program was administered after four faculty members involved with teaching the course were trained as recall inquirers. To date that experience has been successful enough to encourage the faculty to continue the program on a permanent basis.

Similar programs have been carried out in the departments of Physics and Economics. These programs have yet to go into their second year of operation.

A question arises as to how necessary a part of the videotape recall process is the application of the theory for the improvement of instruction. Is videotape recall enough? Additional experimentation in training inquirers provides one answer to this question. A group of four graduate students in the Economics Department were given inquirer training in order to carry out a TA training program using the adapted form of IPR involving 15 other economics TAs. No emphasis was given to the role of Gowin's theory as a means of focusing the recall discussion. After ten hours of training, the inquirers began scheduling recall sessions over the course of the semester. The author sat in on two recall sessions for each inquirer and found that the recall discussion was much less process-oriented, primarily due to the fact that the inquirers were themselves well versed in the subject matter and therefore had a tendency to discuss only the subject matter. The TAs who attended the recall sessions were asked to write down any concepts or principles of teaching that had emerged for them at the end of the recall sessions. The resulting comments indicated somewhat more trivial aspects of teaching had been focused on:

> Connect sections in intro
> Don't swallow end of sentence
> Face class when summarizing graphs
> (recall comments from Economics TAs)

compared to similarly solicited comments from TAs in the Physics Department who were recalled by the author using a much more theoretical orientation. Since the author is not a physicist, there was little opportunity to concentrate on the subject matter except as the TAs and their students interacted directly in the recall session. The physics TAs' recall comments were phrased in a much more refined and potentially

useful form:

> Value student thinking and ideas and communicate the fact that their ideas are taken seriously.
>
> Try to elicit a response from all members of the class. Involve the class as a whole in the problem being discussed.
>
> Do not assume too much about the understanding level of the class as a whole based on the responses of a few. Try to understand the students' level of understanding. Try to pick up situations of broader cross section of students.

Implications for Future Research

From the experiences at Cornell, a number of significant implications arise. The adapted form of IPR is a way of helping teachers conceptualize and thereby improve their teaching; more work and experimentation is needed to determine its breadth of application. Will it be as effective with tenured faculty? Can it be used in lectures with extremely large groups of students? What is the most efficient way in which the training of teaching assistants can be carried out? Will the autonomous programs being established maintain their integrity and continuity over a more extended period of time?

As a method for studying the covert events of teaching the videotape recall technique will require more extensive use in more longitudinal contexts to help refine and expand the conceptual understanding of the teaching process. In addition, the recall technique has great potential for the study of learning by the incorporation of principles similar to Piaget's clinical interview method (Piaget, 1976). Experience has shown that the analysis of covert classroom events through videotape recall generates valuable data for use in curriculum revision and development.

Finally it appears that the use of this method can be helpful in advancing the theory of educating which has been applied from Gowin's work. How will theoretical concepts change and under what circumstances? What other concepts will emerge which can serve to provide a more valid basis on which to evaluate teaching and learning?

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